



Cost-Effectiveness Modeling of Serologic Screening Policy Options for U.S. Army Accession Immunizations: Implications for Improving the Efficiency of Accession Medical Processing

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Briefing Outline



- Objectives
- Background
- Mathematical Modeling
- Implementation of Screening
- Issues
- Questions and Discussion



Objectives

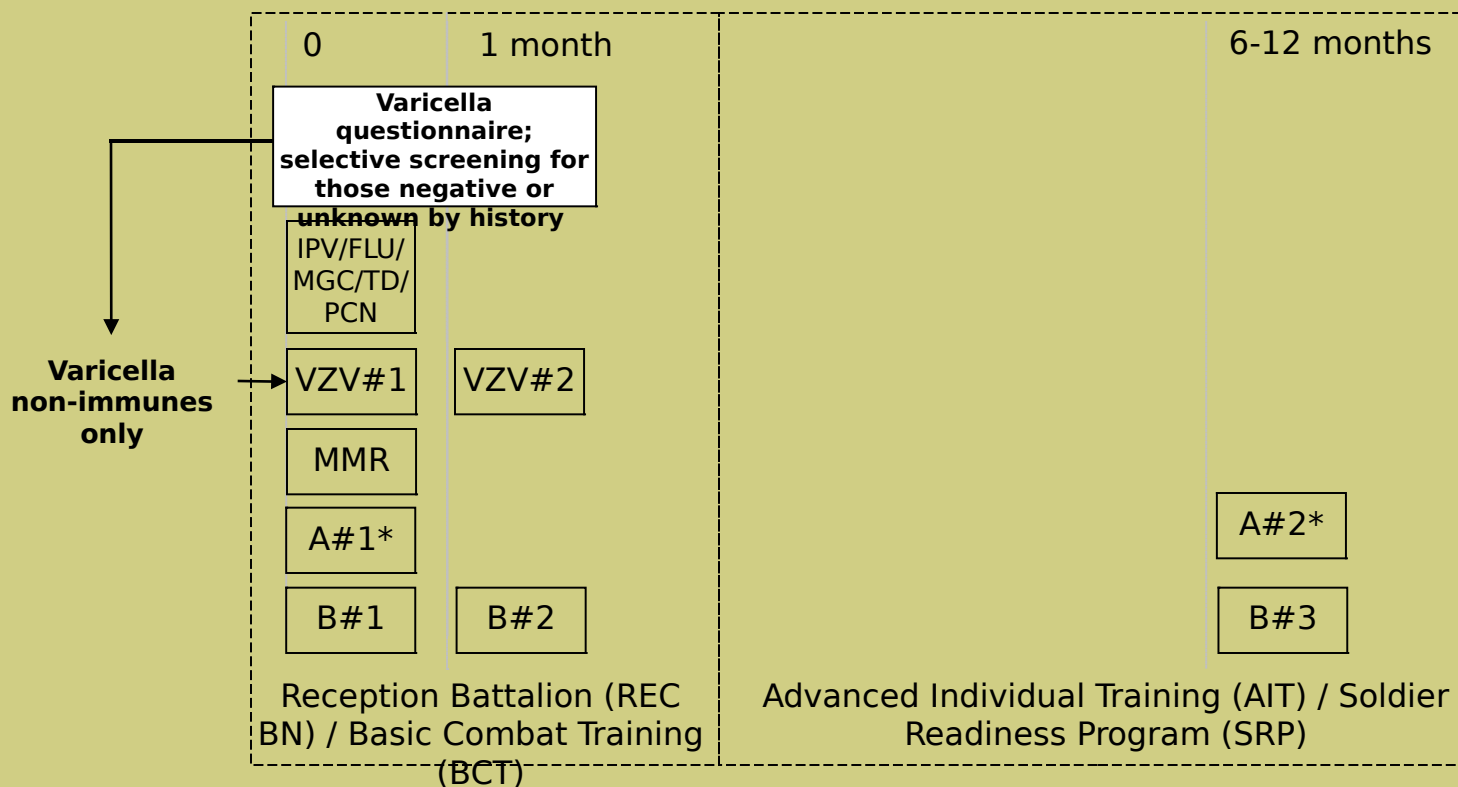


- Familiarize audience with current Army accession immunization practices
- Discuss economic modeling of proposal
- Familiarize audience with major components of the ASIP proposal
- Discuss improvements in efficiency of accession processing with implementation





Background



*Planned for accession immunizations



Background: Multiple Concurrent Immunizations

The image shows the front page of the ArmyTimes newspaper from December 6, 2004. The masthead "ArmyTimes" is in large green and black letters. Below it, the date "6 December 2004" and the website "www.armytimes.com" are visible. The page features several headlines: "Officer promotions" with a photo of a soldier, "Mystery illness" with a photo of a soldier, and "Vaccine cocktails" with a photo of two soldiers. The "Vaccine cocktails" headline is circled in red. The page also includes a small photo of a soldier in the bottom right corner.

ArmyTimes
6 December 2004
www.armytimes.com

Officer promotions Who moves up in Dec. **45**

Mystery illness Rare blood disorder plagues war-zone troops **21**

VACCINE COCKTAILS
DID TOO MANY SHOTS
AT ONCE KILL THESE
SOLDIERS? **14**



Background: Multiple Concurrent Immunizations



October 2003

- DASD for Force Health Protection and Readiness memorandum

April 2004

- Armed Forces Epidemiological Board memo
"...vaccine use could be reduced without any increase in disease risk...."



Project Background



July 2004

- Decentralized screening thought impractical

October 2004

- Current costs and outcomes unknown
- Site surveys and mathematical modeling
 - vaccine and serology costs
 - screening for hepatitis A and B, measles, rubella, varicella

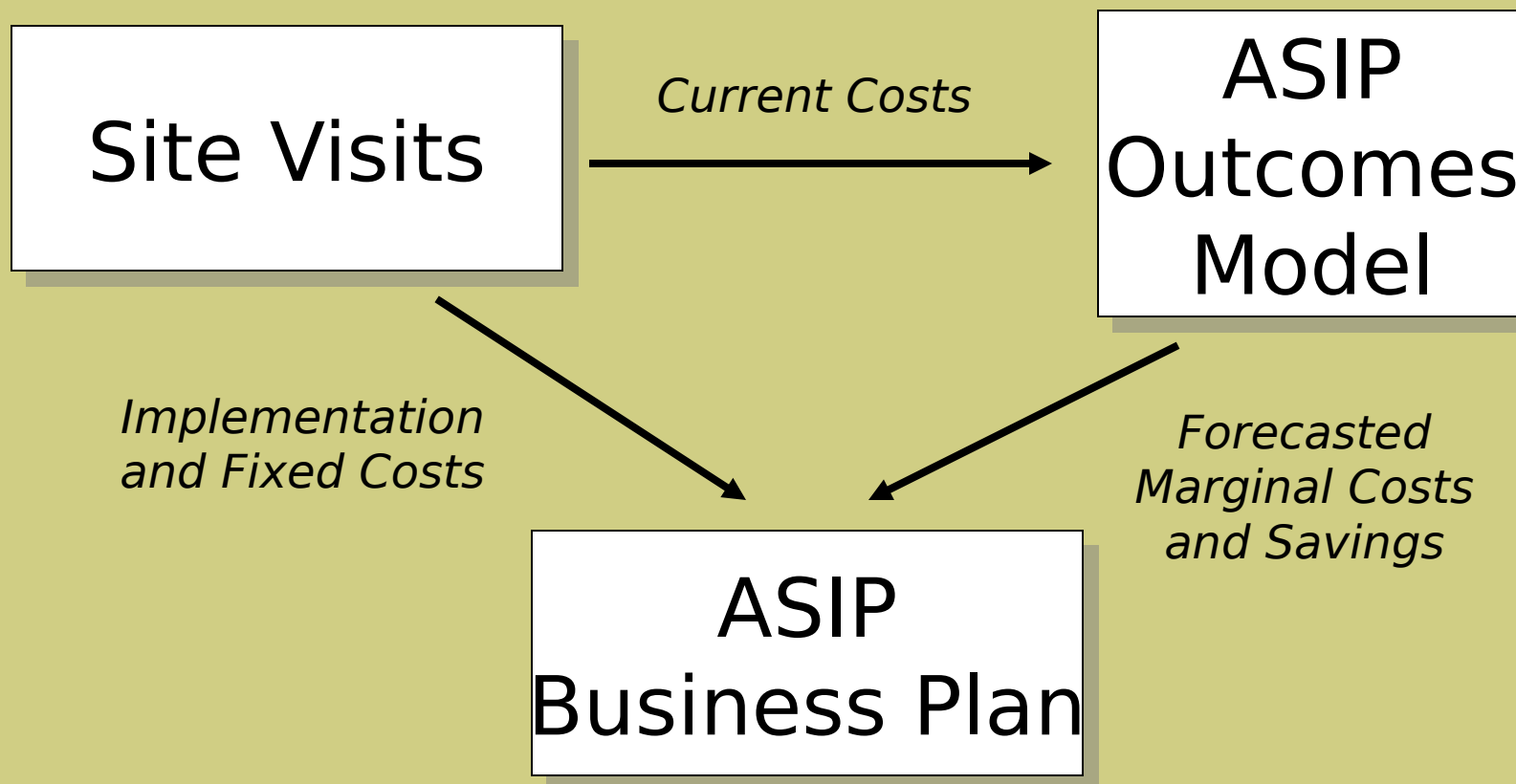
January 2005

- Seroprevalence study and ASIP Business Plan





Project Background





Background: Current Immunization Practices



Accession immunizations occur without central control or oversight

- No central tracking of costs or outcomes
- No method of process improvement
- Lack of standardization
- Inadequate supervision and staffing
- Substandard equipment and facilities
- Inadequate documentation
- Regulatory violations
- Wasteful practices



Site Visits





Site Visits





Site Visits





Site Visits





Site Visits





Mathematical Modeling



- Decision-tree cost-effectiveness model
 - *TreeAge Pro Healthcare*
 - Takes into account interval attrition
- Total marginal costs per accession
 - Total cost of vaccine product and serology reagents used per accession
- Non-economic outcomes
 - Missed immunizations, total needlesticks



Modeling: Rates of Pre-Existing Immunity in 2005



	<u>Model*</u>
Hepatitis A	12%
Hepatitis B	60%
Measles/Rubella	89%
Varicella	95%



*As confirmed through later Army seroprevalence surveillance or research during 2004-2005



Modeling: 2004 Vaccine Costs



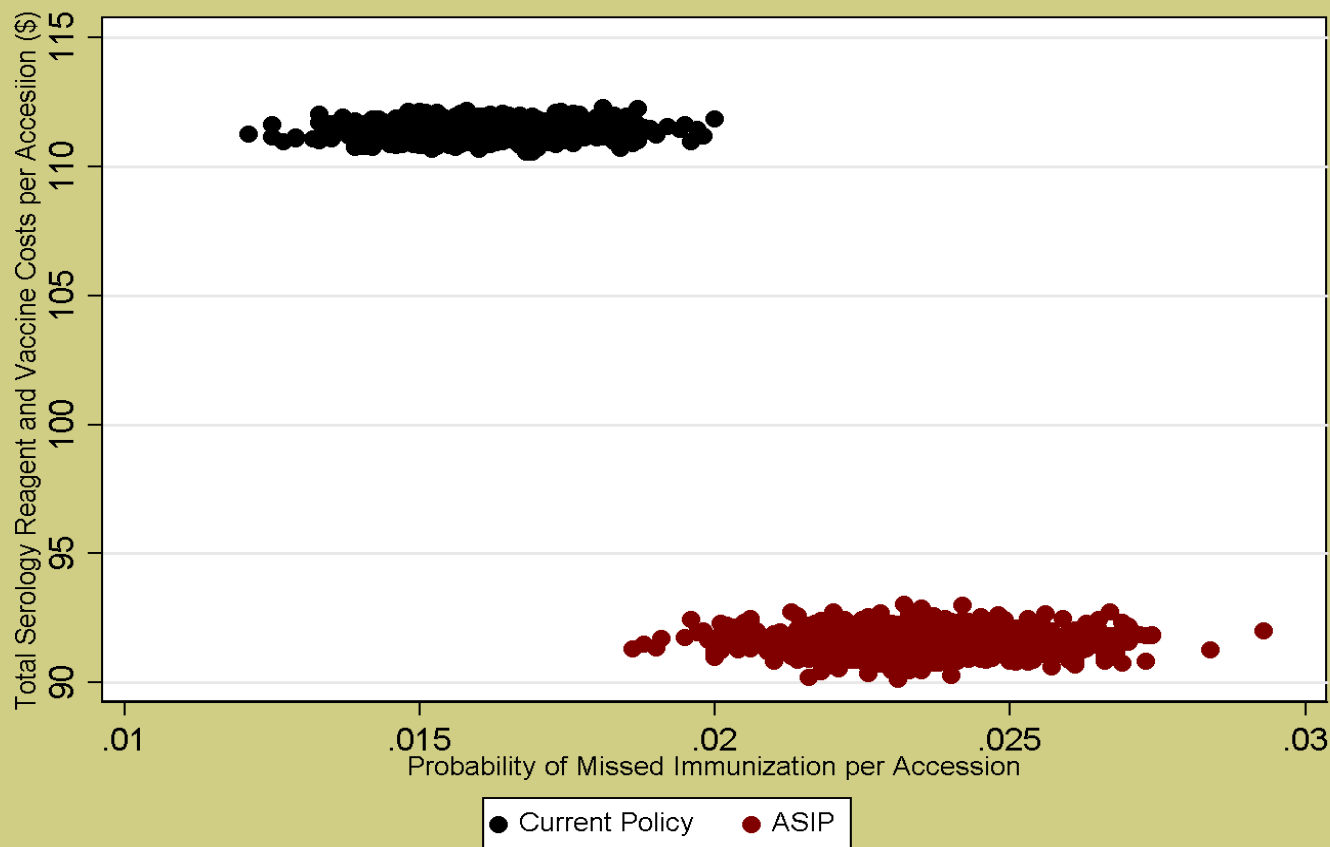
	<u>Model*</u>
Hepatitis A	\$15.77
Hepatitis B	\$24.76
Bivalent Hepatitis A/B	\$30.41
MMR	\$23.86
Varicella	\$35.49



*Based on a review of 4/5 Army MTFs supporting RecBN/BCT sites. Data from Ft. Jackson, SC was not available during survey



ASIP Outcomes: Cost-Effectiveness





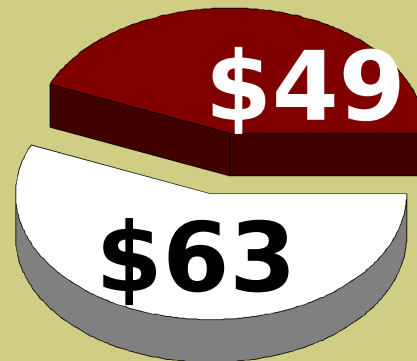
ASIP Outcomes: Vaccine Costs



FY2004

FY2006

FY2011



**unnecessa
ry
necessary**

Per-accession cost of MMR, varicella, hepatitis A and B vaccines
Immunizations are deemed unnecessary due to demonstrable pre-existing immunity to one or more screened diseases

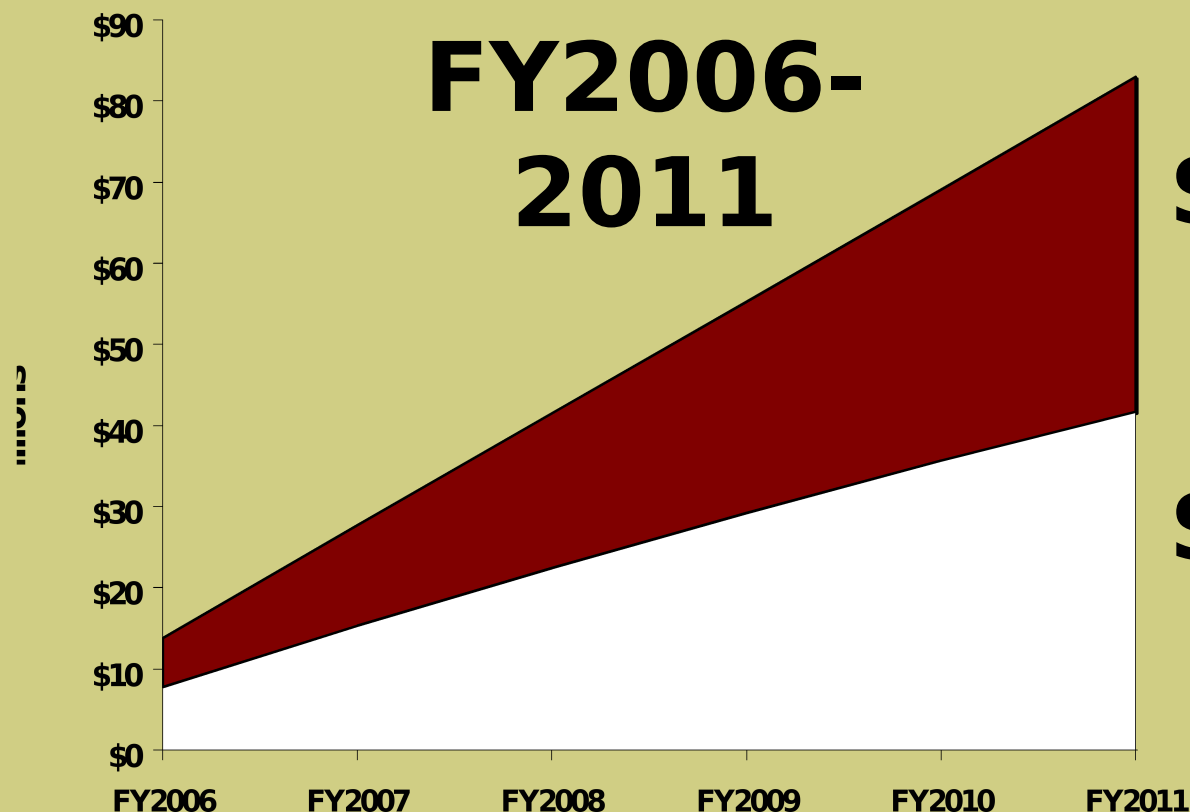




ASIP Outcomes: Cumulative Costs



**FY2006-
2011**



**\$41.2 millio
unnecessa
ry**

**\$41.7 millio
necessary**

Cumulative cost of MMR, varicella, hepatitis A and B
vaccines



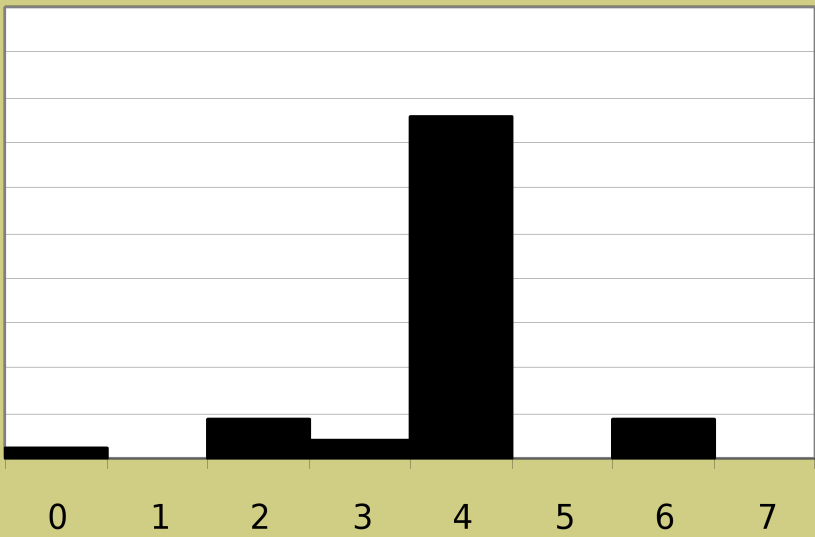
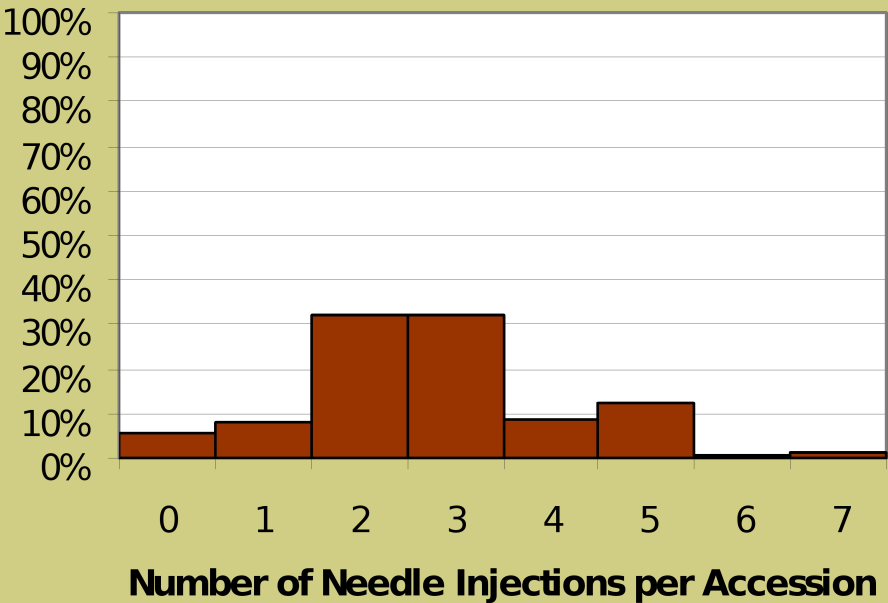


ASIP Outcomes: Reduction in Needle Injections



ASIP

Current Policy



Distributions of needle injections per accession resulting from hepatitis A, B, MMR and varicella



Reference: ASIP Outcomes Mode Revision 4, FY2005 data, mathematical simulation with 25,000 1st-order microsimulations



Program Description



The Army Accession Screening and Immunization Program (ASIP) provides:

- Serologic screening for pre-existing immunity to measles, rubella, varicella, hepatitis A & B
- Improvements in medical processing
- Centralized management and oversight
- Visibility of costs and outcomes
- Improved regulatory compliance, standardization, and coordination
- Flexibility - easy to add/drop particular screening tests





Program Components



- Centralized oversight and management
 - Program Management Office
- Core civilian staffing of 5 ASIP clinics
 - Credentialed on-scene medical oversight
- Rapid serologic screening
 - Dedicated screening platform
- Point-of-care electronic data entry
- Vaccine adverse event surveillance



Implementation



- Self-funding from vaccine cost savings
- Start up costs recovered within 12 months
- Conservative estimates used in budget forecasts
- \$9.1 million total program cost savings FY06-FY11
- Significant additional savings are possible





Budget Highlights



- Hiring of 58 permanent FTEs across 6 sites
- \$190,000 annual budget to train ASIP clinic staff
- \$400,000 startup equipment
 - Failsafe vaccine storage
 - Medical treatment equipment and furnishings
 - Information Technology
- \$250,000 startup capital improvements
- \$100,000 contracting for process improvement





Implementation



- Technically feasible to implement Army-wide beginning FY06
- MILVAX lead agency
 - Establish ASIP Program Management Office
- Improvements in MODS enrollment to make records available Day 1 of accession processing





Program Comparison



Current Program

- No oversight
- No tracking of costs and outcomes
- Core military staffing
- Wasteful and inefficient practices
- Regulatory non-compliance
- Poor standard of care

ASIP

- Central oversight
- Central tracking of costs and outcomes
- Trained, credentialed core civilian staffing
- Efficient practices
- Regulatory compliance
- Military standard of care
- Program flexibility



Questions and Discussion



